

DRAGON USER



The independent Dragon magazine

May 1988

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Editorial

ONCE again — don't forget the Dragon
Show! April 30th, just south of Leeds
off the M1, more information from
John Penn Discount Software on
04323 5870. Earlier has made the
Show a bit late in booking, so we don't
have any more definite information at
the Dragon User office in time for this
issue.

What we do have is the biggest in-
flux of software reviews for some
time, so I have turned over all the
space half pages and cubby holes to
Dragon User, which is why you will
keep coming across it. More all-new
software next month, I hope.

This month's major piece of news
in 'Quickbeam quits — official' in
fact, Compimage will be handling
Quickbeam's former list, but there
will be no new software from GB.
Compimage are, as we said pre-
viously, moving their establishment
soon, but if you have any difficulty
getting through to the old number —
keep trying. They haven't shifted yet,
they're just very busy.

Next month's big news is
waaaaaaay off. (You'll just have to
wait and see — Ivo, the Editor's
computer).

— PETER KAMM

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How to submit articles

The quality of the material we can publish in
Dragon User each month will, to a very great ex-
tent, depend on the quality of the documents that
you can make with your Dragon. The Dragon
computer was launched onto the market with a
powerful version of Basic, but with very poor
documentation.

Articles which are submitted to Dragon User
for publication should not be more than 2000
words long. All submissions should be typed.
Please leave wide margins and a double space
between each line. Programs should, wherever
possible, be computer printed on plain white
paper and be accompanied by a tape of the
program.

We cannot guarantee to return every sub-
mitted article or program. So please keep it safe. If
you want your program returned you must
include a stamped self-addressed envelope.

Letters

This is your chance to air your views on email, your tips, compliments and complaints to Letters Page, Dragon User, 13-19 Little Newport Street, London WC2N 1PP.

FLEXible approach

PLEASE could you tell me where I can obtain the FLEX Advanced Programmer's Guide. Also, could anyone tell me whether there is a FLEX users group, similar to the CG-6 Users' Group.

P D Smith
University Hall
Birkenhead
Merseyside
CH2 3JH

Dragon User May 1988

Motorbike repair

WE found that during typing Motorbiking by Richard Bayliss from the listing in Our November 1987 had some corrections for the LMS commands in lines 399 and 3970 were missing. These should read:

```
399 LINE(167-244,167)-(167-244,176);PSETLINE(167-244,176)-(167-244,29);PSET PAINT(167-244,167)
3970 LINE(167,167)-(167,176);PSETLINE(167,176)-(167,29);PSET PAINT(176,167);
```

To make the program suitable for DragonDOS, type the following lines:

```
80CLS:POKEH1FFA4J
140CLEAR:GOTO36663
150FOR I=6 TO 115READ
A$(P$(C$(36663-I)/4)):"A$
NEXT I
165DATA 1A,1ECC,PF,AL,PD,
G1,DD,AC,PF,2B
166DATA 1A,1A,CC,C1,7B,PD,
G1,DD,AC,PF,2B
167EXEC36663
2240IF B$(I-6) THEN
EXEC36664-2ND
```

Line 80 clears the disc motor timer before IRQ is disabled. Line 165 contains machine code to redirect the IRQ interrupt to the BIOS/ROM system while line 166 restores the normal DOS IRQ vector when you type Q to quit the game.

Should you wish to try this version using cassette tape, then line 158 should be edited to read:

Every month we will be shelling out a game or two, courtesy of our suppliers, to the readers who send the most interesting or entertaining letters. So send us your hints and your opinions, send us your hi-scores and suggestions. Send us your best Dragon stories. What if you think we are, mind readers?



Let's put our money where our mouths are

THE Dragon market is small and game sales are dwindling. Since the publisher is in business to make a profit, it makes sense to target the largest section of the market. This is necessary to guarantee the recovery of advertising costs, duplication costs for a few thousand cassettes, and the high initialisation and printing cost of the inlay cards. If the game sells easily well then there is maybe a healthy profit, and never forget, this is what keeps them in business.

There is an alternative if the smaller market is willing to give a larger profit margin per game than the cost of offset low sales. The smaller market would be expected to be a bit more closely focused when you pay more you expect the best. Ask yourself, is the Dragon version of say Mario Bros or better than the Spectrum version (which it is), am I prepared to pay more for it?

In the UK there are two magazines which run happily on the Dragon. These are *Power* the Sailor Moon and *Mario Bros*. adaption programs which I have first hand knowledge 'you charge them from 'Tandy in the States, and by the time you have paid for postage, packing and import duty they cost about £10 each. If they were produced here without all the eye-catching clutter they could retail at about half that. I suggested you all write to the different houses and tell them you would be prepared to pay ten to fifteen pounds for such a program. Point out that you do not need fancy inlays, a black and white instruction sheet would do. It would then be up to us to put our money where our mouths are. We do need continued software support but we will not get it if people go broke trying to supply us.

Ken Smith, 20 Glast Road, Deal, Kent CT14 6ND

THIS is an alternative and is my view to accurate point of view to the oft expressed "if only dealers would sell their wares at rock bottom prices, everyone would buy them and we would all be ok". There is a limit to how far prices can be slashed before the very act of selling them makes a loss.

Obliquely if not directly related to Ken's theme are Dave Hitchman's comments on our news page this month — see page 4.

```
154 DATA 1A,1ECC,6D,3D,PD,
G1,DD,1C,EF,3F
```

PS — Don't forget the 'Vapor' line 2338 from the October Issue — 2338-B=0 P=0 X=6.

Bob and Ian Thomas
5 Chaverson Close
Hempstead
Gillingham
Kent
ME7 3DF

systems which allow the program to work with DOS 4.0. The revised program works with both the SCOT command and the startup boot routine available with DOS 4.0.

Insert LDA 6555 after POC 6555 line, change JMP 6544 to JMP 6547 and change CMPS 0716 to CMPS 621.

The last part of the assembler source therefore reads:

```
ORG 600H
START POC,6555
LDA 6555
LDX CPNAME
STX 156
JMP 6547
CPNAME POC 34/
MENU 6A55A0
```

When using the loader program the following lines should be used instead of the published ones:

```
60 DATA 4F,55,6E,2E,6E,6E,
61,6E,7E,04,0F
70 DATA 33,4D,4E,4E,5E,3E,
42,41,52,2E,0E,4F
80 DATA 3F,6C,6E,0E,6E,6E,
2E,0E,0A,10,6F
90 DATA 6F,6E,6C,10,6E,6E,6E,
6E,0E,0E,6C,FD
100 DATA 6A,6F,6A,6E,2E,6E,
7E,6E,7E,3E"
```

In the main body of the text the save routine becomes SAVE "BOOTROM",=2556,4H,2E,6E,4H,2E,6E and the EXEC address becomes 616E97.

Note that if the filename to be used is longer than MENU 640 then the CMPS 621 instruction above and the SAVE command should be re-arranged appropriately.

Richard Christie
10 St Oswald's Close
Dork, W. Yorks YO2 1JX

True Professionals

ON the subject of the Dragon Professional, readers may be interested to know that at least one prototype was actually built. A report on a benchtop was printed in Personal Computer World. I am convinced I am unable to give an exact reference, as I have lost the magazine concerned, but I think it was early in 1984. As submitted in the March Dragon

Boot is patched

HAVING edited Julian Chabersky's *Auto Boot* program in the October Dragon User, I discovered that it would not run correctly with DragonDOS 4.0.

I enclose the following cor

User the machine was produced just before Dragon Data Ltd. was taken over by GEC.

The Professional was, I remember correctly, equivalent to a Dragonair, with twin disk drives installed in the same box. The general layout was similar to an Apple II. The specification was somewhat disappointing for a professional machine — for example, the 32-column screen display was retained.

The reviewer complained that the machine stopped working after an hour, as it overheated. The conclusion was that further technical developments were needed, and that, perhaps, Dragon Data had lost too much credibility to be able to market the machine successfully.

It seems amazing that no review appeared in *Dragon User* (Does this tell us anything we don't already know about Dragon Data Ltd's business sense?)

Paula Weller
55 New Lane
Kingbury
Leicester NN9 9DD

With regard to the 'Professional', there were indeed

'related' models up and running at the last Dragon Show just as Dragon Data collapsed. GEC produced a business pack at that show with the Professional, labelled D6008. The brochure was stamped 'Preliminary Product Information' and was produced at the same time as the Touchmaster pack labelled D6011, also stamped accordingly.

The Professional was described as offering 'in one compact and a powerful computing package utilizing the 8086 microprocessor'. With GEC Dragon OS-6 software, the Professional had a wide range of problem solving applications for professional and small business users.

Features included an integral Sony 5.25 disc drive of 500Kbytes (unformatted), an integral modem with 1200CTS baud. Printed mode and 800 800, (local) machine/headline mode, 64K ram, 192 ram basic interpreter, 64 ram modem controller, five graphics modes: 32 characters x 10 lines screen with nine colours, 64 x 32 with nine colours, 128 x 80 with two sets of four colours, 128 x 162 with two sets of four colours and 256 x 128 with two

sets of two colours. 8 octave sound synthesiser with three independent voices, full travel keyboard guaranteed 20 million depressions (That reminds me, I have to log my fax penon — Ed.) and internal switched mode power supply. The Professional could also be expanded up to two 3.5in disk drives and could also be input from two further 3.5in drives.

If anyone knows their whereabouts, please M&M!

Richard Newson
1 Swallow Gardens
Hastind
Herts.
AL7 2EQ

I have unearthed the original press report on the Professional from DU July 1984 and quote briefly: "Dragon! Vets really seem GEC Dragon hitting the big time, with an expected retail price in the region of £2,500 to £3,000 ... full protection of the system is expected to go ahead in July with pre-production models already out." ... but the Editorial of that same issue, probably written very shortly before the magazine went to press, announces

that the receivers have been called in on Dragon Data, by that already partly owned by GEC. "If GEC do take over Dragon Data, it is thought that they will succeed where the Dragon Professional" says the August issue. By September, Burnard had appeared on the horizon, and by October, production had moved to Carroces in Spain. By December, GEC had virtually washed its hands of the Dragon. Various upgrades were talked about subsequently, but the Dragon Professional never saw the light of day.

I have my doubts, but it is just possible that the fact that Dragonair didn't see a working copy of the Dragon Professional was deliberate caution on behalf of GEC — there's an old saying that the best way to kill a bad product is to have a good advertising campaign. Harassing an unfinished machine in the minute scrutiny of the Dragon world would not have been a good move, I think you, having it blow up in front of the PCW technical team wasn't exactly a PR coup, either ...

Crossword

The sixth *Dragon Crossword* is with us in time for Easter, if only just. Where crossword fans are concerned, this is a real Easter egg on the face of it. Wright from Durbaleys, who doesn't say what he wants, but wishes most happy holidays in retrospect what a nice way of saying your Dragon's best and J. Smith at Teyford who is similarly unspecific, but he has his answer right, so a winner he is.

There will be a couple of free tapes from the Editor's Magic Bottomless Box for the first correct entries to reach us each month. You can even try telling us which tapes you'd like in an ideal world. It all depends on what we can find.

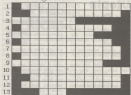
And you don't have to put up your Dragon User, either — entries can be written out on a photocopy or a plain piece of paper, as long as we can read them.

1. Would he destroy a scopy circle? (6,6)
2. Must be a depressive one who works underground (5,5)
3. Viking in a theory (5)
4. A comical race perhaps? (10)
5. A ball singer who got the bump (9)
6. This odd procession using a letter wire (10)
7. You will require a complete statement to get this (6,7)
8. Out in danger from attack on their prison (10)
9. Work and hag together makes a fiery bird (5,4)
10. Rigger than a rock-fall (10)
11. Old age town caught up in the forest (10)
12. Take a plane after dark (5,6)
13. Easy if one is confused (8)



by Terry and Derek Probyn

All this month's answers are names of Dragon software. When the crossword is complete, the column marked with an arrow will spell out a phrase.



Orange flowers

A NEW software house, Orange Software, has started trading from Aberystwyth in Wales. Their launch list, suitably printed on bright orange paper, includes the following software, some of it old, some of it new:

Beamruler on tape or disc for £3.95, along with a tape version only of Beampatch for £1.00. Disc conversions of existing Beamruler cassettes cost £1.00 — original entry cards must be shown.

New games Superious, a shooting game set in deep space, and Matchmaker for younger users, four can play for £2.95 each on tape or disc.

A new version of Crazy-Peetle for the Dragon and Tandy TR8000 IBM.

New utilities Sports-Designer (tape or disc) for use with Basic or machine code programs and Jewel (disc only) for use with Basic-82 by Harris Software are £4.95 each.

New utility Test-Screen Designer for designing testing screens, £2.95 on tape or disc, and Orange Book, a book routine for many DOSs, also only £1.95.

They also have a list of several scheduled and recent adventure releases. Orange are looking for new Dragon/Tandy software.

For last sheets, price lists and more information, send an SAE to Orange Software, The Garth, Star Road, Mam-y-Dery, Aberystwyth, Dyfed NP23 5BP.

Utopia by Pulser

ALONG with their latest release, Spy against Spy, Pulser Software are releasing a new machine code arcade game, Utopia, scheduled for the Cesset Show on April 30th.

Pulser's forthcoming adventure release, Pally, has been held back while they investigate and correct a major bug discovered in the program (voluntarily to be ready in time for Cesset).

Pulser would also like to



Dude quits

DAVE Martin is no longer running DUDE (the Dents Users Data Exchange). The new organiser is Lee Cooke, 117 Lancaster Lane, Soring by Sea, Worthing, W. Sussex BN12 6AD.

Dave says: "Giving me thanks is all the people who have given help and shown enthusiasm for DUDE while I was involved."

hear from any budding programmers who wish to market their programs. "We would like to try to promote new writers and give them an opportunity to market their ideas on the Pulser Software label. We propose to examine their efforts and give them feedback on how they can improve them and then sell them on an 'economy label' for a maximum of £2.95," says Pulser's Brian O'Connor.

Just off the ground

REPORTS from the Cardiff Airport Show in February say that, although less than 100 people turned up at the door, the show itself covered its costs comfortably and that attending retailers were well satisfied with their sales there.

Self-organiser Helen Peen "We were running the Show on a co-operative basis, so that everybody who took part shared in the gate money. In fact, I have just mailed off an extra £10 to those people. Overheads were extremely low, so that we could take advantage of the site without having to drive a massive crowd." The remote site and a hitch in the advertising campaign probably conspired to keep away a few people who would otherwise have attended, but overall the Show was successful, and the Peens are now looking forward to the next show at the much more popular Cesset site

on Saturday 30th April.

The contrast between the Cardiff Show and the sixth 6000 Show in London in December was pointed up by Robbie Preston of R & H Preston: "We sold plenty of games and did OK, but John and Helen Peen lost a certain amount of money on the show because the overheads there were extraordinary." Finding an inexpensive site in central London has so far proved fruitless.

This experience must point in the direction of smaller regional shows for the Dragon in future. The 1987 Cesset show was acclaimed by everyone who attended as a great success both financially and socially.

The Cardiff show could turn out to be a valuable pointer to keeping Dragon shows viable in a time of falling support for the Dragon.

Comms port for all

JIM Pulser, G4WFI has designed, tested and built an RS232 port which slots software and hardware compatible with the serial port on the Dragon 32 and 64.

Unlike many Dragon 32 RS232 ports, the new module can be used by comms software written for the Dragon 64. The port can be accessed via addresses 04FF04-04FF07. The only two conditions affecting program compatibility are that the software must be able to run with only 32K of RAM, and must not use any calls to routines that are available only in the Dragon 64 rom.

This upgrade is contained on a small printed circuit board which fits inside the Dragon's case. The link with the outside world is via a 3-pin DIN socket on the left-hand side of the case, whose connections are configured to match those of the Dragon 64. Because the unit is permanently installed, the expansion port is free for use by a CGS cartridge.

The upgrade is available for self-fitting for £30, complete with fitting and programming instructions. Careful soldering

with a fine iron is all that is required.

Alternatively, a soldering service for £8.50 is available from Chris Foster at 2 The Row, Berwick St-James, Nr Salisbury Wiltts SP4 4TA. Tel. 0722 760330.

These RS232 boards have already been installed in Dragon 32s by radio amateurs wanting to use radio-related serial hardware. The interface can be used to drive a serial printer using a machine code routine and the ram block at \$407. A source listing for this is included.

For more information or a letter, send an SAE to Jim Pulser G4WFI, 40 Katherine Road, Annetbury, Nr Salisbury, Wiltts SP4 7AD. Tel. 0722 760330.

No Chera

John Foster has written say that his projected software house Chera Designs (Adventure has, December 1987) will not now be going ahead owing to the smallness of the market.

Quickbeam comes up against its final hitch

Dave Hitchenman's original software company, Quickbeam Software, has left the software business, selling its stock to Harry Massey at Compuser.

Compuser will now be sole suppliers of Quickbeam products.

Dave told *Dragon User* that pressure of work in his career had meant that he was no longer able to give customers the service they needed. "My customers will know that something's up, because I have quite a few letters that I haven't had time to answer yet," he said. "I'm travelling a lot more now and I sold out to Harry because I reckoned that he could give people the better support than I could under the circumstances."

Thanking DU for its five-star review of *Indoor Football* in the April issue, Dave said ruefully that it came just too late for him to benefit from the expected sales boost, "but I sold quite a few copies before the review, and it'll give Harry something to kick off on."

He stressed that the main problem had been Compuser's failure to take over Quickbeam's list was that "I think they'll be around for a long time, and it was part of the agreement that they would support my previous customers, as well as just selling all the current stock."

Dragon User asked Dave if the criticisms that his prices were too high, made by well-known sections of the *Dragon* following from time to time, had played any part in this quitting. He replied that it certainly had not.

"Someone rang me up from one of the fanzines and put that to me. I told him, if you think that you can publish original software for less, you go and do it."

"I know that the card snaps were cheap and nasty, but that is what you have to do to keep prices down. In their reply, Merriwell were selling games for at least £5, and they weren't developing much of them. I bought in software because I wanted it, and I had to pay for it myself, from scratch. One of my programmes was offered £25,000 to go and work somewhere else, but he stayed

to finish his work for me. How can we compete with that?"

"I didn't run Quickbeam to make a profit—I couldn't, I had to look at it as a management and marketing exercise. But my customer has taken over my hobby. It's a pity. I would like to thank everyone who has supported us, and say I'm sorry to be leaving."

Other suppliers are finding it increasingly difficult to place original, pre-quality software on a competitive basis. Only recently, Paul Denny said that for work on *Romule One* would be unlikely to cover costs, even if the game was popular.

Other software is being published by authors, or with no development advance to authors, in order to keep prices as low as possible. This is, of course, only possible where the author is running another, full-time, career.

Pundits have been spreading the rumour that Quickbeam would sell out for at least six months to date, but Dave Hitchenman stoutly denies any plans to sell out before his career change intervened. This lends force to the feeling among *Dragon* professionals that spreading doom, a pastime favoured among some *Dragon* observers without a financial or professional stake, is actively detrimental to the *Dragon* market, destroying confidence among *Dragon* users.

SOS-9 — alert over

Malcolm Cowan of the SOS-9 Users Group (see April issue *Stop Press*) has written to say that Martin Vernon has now become toxic. He did not make clear whether the running of the group was back to normal, but he suggested that members and prospective members should be longer than usual to clear games.

For those who wondered—no, it wasn't an April fool. They really did lose him.

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Pamcodes

Part six of Pam D'Arcy's introduction to machine code

TO kick off with last month's hangover:

(5) The program error in *Below Zero* is that the text screen is 512/512/80 bytes long and only 511/511/80 bytes are cleared.

(6) The single instruction to use the clear text screen/ROM routine (ISA 96A77) introduced in December's article could be used to replace the instructions that initialise registers for and the actual CLEAR loop instructions.

Auto increment and decrement

These are useful instructions when working through consecutive memory locations as they combine the functions of two separately available instructions, saving memory and execution time. Either of the four indexable registers, X, Y, S, L, may be used for the auto increment and auto-decrement modes. Following the register in the operand column with + and - respectively causes the instruction to be carried out and 1 or 2 respectively to be added to that register. This is auto-increment, sometimes also referred to as post-increment.

In **Listing 13** (last issue) (I got the editorial staff's letter when I can squeeze it in again),

```
STX, X+
;thus copies the contents of register X as
;that implies the memory address contained in
;register X at that time. This then added to
;the memory address contained in register
;X, it therefore gives the same result as
STX, X
LEAX, X
;but takes a line of source and object code
;and its execution time is later than they pair
;of instructions. The format for auto-in-
;crementing by 2 is:
STX, X++
```

The auto-decrement may also be referred to as pre-decrement because the subtraction of 1 or 2 (- on) (operands 96F0A) carrying out the instruction. I feel that the position of the symbols also tell us a memory jogger as the + sign follows the register - after or post increment, whereas the minus sign(s) occur between the comma and register.

```
STX, X-
;subtracts 1 from the contents of register X
;then copies the contents of register X to the
;contents of new memory address now con-
;tained in register X, it therefore gives the
;same result as
LEAX, X
STX, X
```

The format for auto-decrementing by 2 is

```
STX, X--
```

No additional effects are permitted in the auto-increment/decrement modes: that is, no register or value (other than null) is permitted to precede the comma in the operand column.

In **Listing 13**, register S is being used to contain the memory address of the text screen position that is currently being set to 0A0. After moving the 0A0 to that position, the auto-increment adjusts the memory address to point to the next text screen position.

Useful application

A useful application of auto-increment is when one wants to print strings of data. I have found this series hard work as I feel it is a total vacuum. I am in the seventh article and there have been just two items of feedback from readers — one at the London Dragon Show requesting machine code routines for the files of GET and PUT and the second from Denis D'Mulvey who sent me his version of December's 'point your smile' workout. This is **Listing 14**. It is obvious that he knows more machine code than an absolute beginner as I was not even intending a loop to be used at above position independent code using an LEA instruction and use of auto-increment mode to boot. However, I shall use it and build on it as he does use auto-increment mode for displaying a string of data on the text screen. Let us consider the use of the LEA instruction first.

Actual memory addresses

I referred above to feeling like writing is a vacuum. Writing position independent (or relocatable) code can also be a little like that. One perhaps has several prompts or messages that one may need to output to the text screen at an appropriate time yet, as the code may be loaded anywhere in memory, how can one determine the actual address of a message for displaying on the text screen?

LEA — Load Effective Address is the original instruction. We have previously only used it in the context of performing arithmetic on either of the indexable registers, LEAX, LEAY, LEAS, LEAL. The use that we are going to put it in now is just about the most powerful function of the instruction set when creating position-independent code. The same indexable registers (LEAX, LEAY, LEAS, LEAL) are available for this function.

When the operand is in the form of the name of a label, PCR, the actual current memory address of the first byte at that label name is actually computed for us and is placed in that register. Thus, to take **Listing 14**, if the speed machine code is relocated at the same memory address as assembled at 04C00, the actual memory address of the start of the data at label NAME is 04C00. However, if the code is

Listing 13

```
STX, X+
;STX, X+ or STX, Y+
;STX, S+ or STX, L+
;STX, X- or STX, Y-
;STX, S- or STX, L-
;STX, X++
;STX, X--
;STX, Y++
;STX, Y--
;STX, S++
;STX, S--
;STX, L++
;STX, L--
```

```
STX, X+
;STX, X+ or STX, Y+
;STX, S+ or STX, L+
;STX, X- or STX, Y-
;STX, S- or STX, L-
;STX, X++
;STX, X--
;STX, Y++
;STX, Y--
;STX, S++
;STX, S--
;STX, L++
;STX, L--
```

```
STX, X+
;STX, X+ or STX, Y+
;STX, S+ or STX, L+
;STX, X- or STX, Y-
;STX, S- or STX, L-
;STX, X++
;STX, X--
;STX, Y++
;STX, Y--
;STX, S++
;STX, S--
;STX, L++
;STX, L--
```

```
STX, X+
;STX, X+ or STX, Y+
;STX, S+ or STX, L+
;STX, X- or STX, Y-
;STX, S- or STX, L-
;STX, X++
;STX, X--
;STX, Y++
;STX, Y--
;STX, S++
;STX, S--
;STX, L++
;STX, L--
```

```
STX, X+
;STX, X+ or STX, Y+
;STX, S+ or STX, L+
;STX, X- or STX, Y-
;STX, S- or STX, L-
;STX, X++
;STX, X--
;STX, Y++
;STX, Y--
;STX, S++
;STX, S--
;STX, L++
;STX, L--
```

```
STX, X+
;STX, X+ or STX, Y+
;STX, S+ or STX, L+
;STX, X- or STX, Y-
;STX, S- or STX, L-
;STX, X++
;STX, X--
;STX, Y++
;STX, Y--
;STX, S++
;STX, S--
;STX, L++
;STX, L--
```

```
STX, X+
;STX, X+ or STX, Y+
;STX, S+ or STX, L+
;STX, X- or STX, Y-
;STX, S- or STX, L-
;STX, X++
;STX, X--
;STX, Y++
;STX, Y--
;STX, S++
;STX, S--
;STX, L++
;STX, L--
```

```
STX, X+
;STX, X+ or STX, Y+
;STX, S+ or STX, L+
;STX, X- or STX, Y-
;STX, S- or STX, L-
;STX, X++
;STX, X--
;STX, Y++
;STX, Y--
;STX, S++
;STX, S--
;STX, L++
;STX, L--
```

```
STX, X+
;STX, X+ or STX, Y+
;STX, S+ or STX, L+
;STX, X- or STX, Y-
;STX, S- or STX, L-
;STX, X++
;STX, X--
;STX, Y++
;STX, Y--
;STX, S++
;STX, S--
;STX, L++
;STX, L--
```

```
STX, X+
;STX, X+ or STX, Y+
;STX, S+ or STX, L+
;STX, X- or STX, Y-
;STX, S- or STX, L-
;STX, X++
;STX, X--
;STX, Y++
;STX, Y--
;STX, S++
;STX, S--
;STX, L++
;STX, L--
```

```
STX, X+
;STX, X+ or STX, Y+
;STX, S+ or STX, L+
;STX, X- or STX, Y-
;STX, S- or STX, L-
;STX, X++
;STX, X--
;STX, Y++
;STX, Y--
;STX, S++
;STX, S--
;STX, L++
;STX, L--
```

```
STX, X+
;STX, X+ or STX, Y+
;STX, S+ or STX, L+
;STX, X- or STX, Y-
;STX, S- or STX, L-
;STX, X++
;STX, X--
;STX, Y++
;STX, Y--
;STX, S++
;STX, S--
;STX, L++
;STX, L--
```

```
STX, X+
;STX, X+ or STX, Y+
;STX, S+ or STX, L+
;STX, X- or STX, Y-
;STX, S- or STX, L-
;STX, X++
;STX, X--
;STX, Y++
;STX, Y--
;STX, S++
;STX, S--
;STX, L++
;STX, L--
```

```
STX, X+
;STX, X+ or STX, Y+
;STX, S+ or STX, L+
;STX, X- or STX, Y-
;STX, S- or STX, L-
;STX, X++
;STX, X--
;STX, Y++
;STX, Y--
;STX, S++
;STX, S--
;STX, L++
;STX, L--
```

```
STX, X+
;STX, X+ or STX, Y+
;STX, S+ or STX, L+
;STX, X- or STX, Y-
;STX, S- or STX, L-
;STX, X++
;STX, X--
;STX, Y++
;STX, Y--
;STX, S++
;STX, S--
;STX, L++
;STX, L--
```


attacks for the enter 'Y' (but after display) in his routine. If a terminator such as a null is chosen, a GoMPipe extraction is not needed as the very action of copying the text character of the string into register A(\$DA, \$t) sets the zero flag of the CCR which is encountered enabling null to be instantly tested for and an exit to be made from the subroutine back to the calling program.

I will now leave you to fathom out **Listing 15**. Decimal 12 (900) is the ASCII code for carriage return (up to the start of the next screen line) also enter key when obtaining keypresses). One could boldly say that the

one-wonder is a common situation. For instance, one could automatically output a carriage return before RTS when the null was encountered. However, there may be times when it is very useful not to always do so, such as prompting for input on the same line. One could always provide the terminating null with a 'N' where one specifically wanted to end the display ready at the start of the next line. Note in **Listing 16** where BSN PHNT is repeated without an intervening LBRK. This is illustrating where one can take positive advantage of register X being auto incremented and

left is that final state by the sub-routine (which is in this instance, printing to the start of the next message for displaying a number of consecutively held messages).

Should you try **Listing 15**, you will find that I am not able to edit when writing) a small piece of code quickly (or, come to that, any other code at any other time). No problems with it working — just silly slips in the message content for you to put right.

That's another space allocation done for, I'm afraid, so positive and negative numbers will be dealt with next month — positive.

Dragonsoft

New software for review should be sent to Dragon User,
12-13 Little Newport Street, London WC2H 7PP.

Amenophis the simple

Title: *Pyramid*
Price: £3.50 plus 50p p&h
Supplier: Dragonsoft Services

ALTHOUGH at first this program may sound like an adventure about an ancient Egypt, it is in fact not set in the pyramids of Egypt, but in one that is new to adventures but one which undoubtedly offers a total scope to the writer ever striving for inspiration.

The idea may not be new but its producers are new and expanding: Dragonsoft Services, an imprint of Dragon, a unit of WMS, where the machine was raised and it seems is now being nurtured in its old age. Dragonsoft have however been suffering a little from the fact that a couple of years ago they have other software such as *Understanding of Code* in their range which I may mention and a quick flick through some back issues of *Dragon* reveals the fact, as is also marked by a firm called Morden.

Your task in the game is to explore the pyramid in which the tomb of Amenophis III, the father of Tutankhamun, is located. Once in the tomb you must obtain his gold and silver and the death mask of Amenophis himself.

After a graphics screen loader and some telling instructions you find yourself at a small shop where there are various items to buy, but alas you don't have any money (at least not enough) to do so.

Anyway, undeterred by having none of your allowance five items on your inventory list you can venture outside and make your way to the pyramid, although to get in there you will need light. First task therefore is the original adventure guide-line of examining everything in sight.

Having solved the first problem you've more or less free to wander at will, although there is a collapsing floor if you're not careful and the vicious cobra is just past. There is plenty of time to think of how to solve your problem though, as the game is not played in real time contrary to the popular trend.

The usual verb-noun situation applies with directions shortened to one letter, ie 'W' although 'U' has to be prefixed to the direction. Vocabulary is limited but if you can't find the right words for the task you're either doing something unnecessary or are suffering from a serious case of verbal delinquency.

Commands to the game include the *move* command which allows you to move a position in the eight-point manner and return to it if necessary, a useful help when trying to find out which room to visit to smothermen with the dynamite. There's also a *save/load* command so you can't lose to hear yourself away but drastic events interfere like the need to make a living, or a herd of stampeding elephants about to plough through you from down.

I like this game, but, and this is a bit I don't often see in reviews, it's one that is too easy. Even alone it's a piece of

of playing, I completed it quickly and although there's always the satisfaction of succeeding, I feel a touch more intrigue, even the stampeding elephants I just mentioned, would test the brain to a greater degree.

Coming to a close though, this is a logical adventure where problems are solved by doing what you'd do in real life, not by obscure phrases and no chance it may not be said, doesn't have redefined text, but it is interesting to play and also, on the cassette may I say, 'interesting' but despite completing the game my television hasn't liked yet — apologies to Dragonsoft if it's just the Dragon that's noisy.

This certainly isn't the looking for words game more from this firm, and they promise more later. I'm only sorry I can't give this more than five stars. Dragons, but their description of being 'humbling' is a bit of an exaggeration.

Philip Scott



Go boldly in reverse

Program: *Space Inv* and
Reversal on one cassette
Supplier: Premier
Price: £2.95

I must confess to some considerable surprise that anybody should wish to re-release two games that have made it

into the charts originally. These were both put out by Nolan in 1982, both written in Basic and no attempt appears to have been made to update them. *Space Inv* is still in the original form, but contains the unchangeable 'double Y' in engineer mode (I wish I spoke engineer — now I see why) in the instructions, and unfortunately is as bad as ever. The screen display is too small, totally confusing another interpretation to press the Break key is almost unavoidable. The game can be played with a joystick or keyboard and adds the command in the instructions that 'It may seem a little difficult at first, but it will only take a few minutes to get used to it'.

The object is to destroy all the Nagan in the galaxy at a given time with the aid of a battle computer which will automatically fire the ship's phaser banks when you place the ship in set positions in relation to the 'Nagan', ie from the four corners and the four sides. There is a large screen to enable you to see the contents of any space quadrant up to seven quadrants, and the scanner is damaged when its range decreases rapidly. In order to proceed through the galaxy and reach the objective you have, of course, both impulse drive and warp drive, energy shields and 'to-die-for' crystals to take to the star bases, and, finally a considerable resistance. It has a printout and paper to note the positions of the star bases, planets, etc.

Unfortunately, for this version of *Space Inv*, both Salamander and Winterball

Continued on next page

Dragonsoft

New software for review should be sent to Dragon User,
12-12 Little Newport Street, London WC2N 7PP.

Continued from previous page

produced versions called Dragon Ball, Salamander with a twelve page fight manual, and Wolfenloot are much nearer to the original, both of them superior to it. But all three are infinitely forgettable when 'badly going' in front of an episode of the TV series.

Revelot or Othello as it is sometimes known is perhaps worth a re-issue if coupled with a chess or draughts as a timekiller, but it appears to me a peculiar choice to partner with Space Inv. However, the game is very well displayed. Mark is blue, but the graphics are splendid. The computer's game is a little slow even with the speed potset and it seems to spend a lot of time 'thinking'. There are four levels of skill the first of which is rather easy as I beat the computer by a wide margin, armed with a huge arsenal of complacency I immediately jumped to the hardest level where my ego was dealt a severe blow! This program is superior to the Greys version which only had

two skill levels and I found it quite absorbing. My wife usually beats me at the board game itself, so I have to lose graciously with the computer. It can turn it off and not tell anyone!

As a whole for those who do not have other versions Preston has to be congratulated

for producing a package cheaply, but I feel their later disc package of similar games are better value for money, and perhaps a better choice. Only one dragon for Space Inv, three for Revelot and four for Preston themselves for offering the re-run for those who missed the originals. I would

suggest that they improve the presentation! Cheapness is no excuse for obvious spelling mistakes!

R. J. M. Houston



Another foot onwards . . .

Name: Crazy Fools 2
Supplier: Computape
Price: £2.95 Dragon 32 or 64, one or two systems (switched or port). One or two players. Cassette or disc.

Crazy Fools 2 now available from author Grahame Smith at Orange Software, £2.95.

YET another football game (and so spoiled for choice), this time coming from Computape, continuing their Crazy Fools series.

Crazy Fools 2 is described as being greatly improved on

the previous. Initially when it is leagues above Crazy Fools, but it has to be said.

The game takes you through a little time to lose. After a well drawn title screen comes a small burst of music. Although not of the same standards of Superlat, Rite-Ball etc. it's much improved on the few beeps we get in C.F. 1. First come the instructions (as usual I didn't read them). Next you are shown a list of options. Among them you can select a single player game against the computer, you can display the high score table or you can turn the game.

However there's another option. Pressing 'D' displays the other options. This is where Crazy Fools 2 comes into its own. You can select change the speed of your players, alter the time out for each game and select names for both the red and yellow teams. Red and yellow in this case because this game's in colour.

Having selected all you want, you can then begin the game properly.

You can either choose to play an opponent or the computer. The main drawback with

Continued on page 11

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Byte contents

0-7 Filename, as left justified and blank-filled. (Byte 0 is the file that has been deleted and the entry is made available again.)

If the byte 0x00FF, the entry and all following entries have not yet been used.

8-10 file name extension, left justified, blank filled and may be assigned to user's reference.

11 file type:

0=Basic program.

1=Basic data.

2=Machine-code program.

3=Text editor.

10 ASCII flag.

0=Ministry format.

FF=ASCII format.

13 The number of the first granule in the file (0-25).

14-15 The number of bytes used in the sector of the file.

16-23 These bytes are not used.

Once again we have a dump, track 10, sector 6. Figure 1 shows a part of the directory from Tandy DOS. From this we can get the file data:

Bytes 0-7 gives us the filename. If you look at the values you will see these represent the ASCII code for the filenames listed to the right.

Bytes 8-10 gives us the extension used.

Byte 11 is the file type, 0=Basic, 1=Basic data, 2=Machine code, 3=text editor source code.

Byte 10 The ASCII code flag 0=Binary, FF=ASCII code.

Byte 13 The starting granule on the disc. Byte 14 Reports the number of bytes used in the last sector of the file.

Here look closer at the files, for example, the filename "SCRAMJMP00". The value of byte 15 we have is 0x0F (or 76 dec.). This indicates only 76 bytes were used on the last sector.

Here read 16 bytes left the value at byte 13 is 0x402 (1042 dec.). Therefore the first granule used in this file is on track 34, sector 1 (granule 88). Further left the next value is at byte 12, 0x0FF, which shows this filename saved in ASCII format as the flag is set. Once the CoCo picks up the first location in a file it will then go to that granule

position on the allocation map (track 10, sector 6), to pick up the next granule and so on until it finds a last granule marker. Then the CoCo knows the file is completely loaded.

Lastly a mention about the command "DOS". When DOS is typed in the Tandy disc goes to track 34 and shows for the letters "DOS" followed by three copies of the entire track into memory. If (S) is present then it will load the system.

Many are reluctant to use it (due to their own programs) remember to use the letters "OS" at the start of your program. Also you must allow five bytes space in front of the routine for the Tandy DOS to use for system control bytes.

Tandy DOS system usually starts loading the first data block at granule 32 on track 16. It is a good idea to start Tandy DOS loaded routines at track 16 and follow in the system.

As this format shows, the directory files are stored differently to Dragon DOS. Also to be noted is that Tandy DOS has no file write protection facility in byte 0. I have listed the details for the directory file below.

Dragonsoft

Now software for review should be sent to Dragon. Then,
12-13 Little Newport Street, London WC2E 7PP.

Every picture needs a thousand words

Program: Picture Maker

Supplier: John Penn

Price: £10.00

The main disadvantage of using the higher resolution graphics modes is the comparatively large amount of data that needs to be input in order to produce quite modest results. Something as simple as a box viewed corner on a windowed minimum of nine lines drawn on the display, as well as having to determine the exact screen locations for drawing the lines. What is needed is an on-screen graphics utility package to enable the creation of basic displays — with the facility to amend the display, and store it for recall at a later date.

Enter Picture Maker from John Penn Software. This utility allows the design of PMODES graphics using mainly the four corner keys (or optional joystick) to draw the lines. Each line can be drawn in turn and altered until it is correct before being "entered" (or cancelled if it is not satisfactory). The example shown here was one which I was able to produce in a couple of hours using the package — plus a suitable illustration as a guide. Now, I must admit to being totally unable to draw anything on paper and so found the "try

it and test" ability provided by Picture Maker particularly useful. Also, the availability of the GET and PUT commands to move whole areas of the screen display around was very important. In drawing the portrait I started with the eyes, and finding them too close together I was able to relocate them until they were correctly placed. (The image of Ludwig van Beethoven's eyes wandering around a video screen is the stuff of nightmares!) Once

the display is complete it can then be filed to tape.

That was the good news — now for the bad. What would appear to be a very useful package is set down by inadequate documentation. The double-sided A4 sheet provided needs to be considerably expanded in order to explain more fully the functions available. I'm sure that there must be other functions available but, frustratingly, it was impossible to find what

they were! For example, mention is made of three "screens" — the "view" screen, which is presumably the one producing the display — plus a "user" screen, and an "info" screen. What these are and what they do is not made clear! Also, the section on the break functions would benefit from considerable expansion.

Unfortunately, the screen dump program supplied with the package proved incompatible with the printer that I was using due to codes being required which were not recognised by the printer. This difficulty was overcome by re-typing line 8 of the screen dump program provided, on to the beginning of a suitable dump program taken from the pages of Dragon User. (It was necessary to alter the PPMOUT values to read 0 or 1 when doing this.)

In summary, given clearer documentation, this would appear to be a very comprehensive package but the fact that I was unable to use it to anywhere near its full potential makes an accurate assessment difficult. One-dragon as it stands, but I'm sure another two with a revised instruction sheet.

Clifford Lee



Getting the point

Nigel Mason shoots an arrow at the Dragon

If you are a little jealous of all those other computers that have a mouse controlled environment, but you have a pointer-to-mouse type joystick, then I offer a partial solution. (Could someone do a review of Hamish's KIM utility for RAMDAC? please?) Listing one is CASAM format assembler gives a non-destructive pointer on RAMDAC4 screens, which returns controls Basic when the fire button is pressed (and contains other keys on the keyboard). A pointer and on-screen icons give the programmer much better control over user input and is ideal for users who are unfamiliar with a keyboard. Alternatively type in **Listing two** and then save it before running. The checksum should spot any errors. If all is well, then save the code with

```
CASAM>POINTER,ARROW,ARROW,
&HFE2E
```

Also before RECCoding the code have at least four graphics pages reserved and a joystick plugged into the right-hand joystick port. EXEC &HFE2E to run the code. If you want to use other graphics pages than POKE &HFE66 with the hex value from the following table:

Start page	1	2	3	4	5
POKE value	06	0C	12	18	1E

Use the following functions to find the co-ordinates of the arrow point:

```
DEF FN X(X) = (PEEK(X+564)
AND &HFE04)
DEF FN Y(Y) = (PEEK(X+568)+2*
(PEEK(X+564) <> 0)
END
```

```
X=FN X(X)
Y=FN Y(Y)
```

You must have four consecutive graphics pages reserved from the start page, otherwise the pointer will overwrite the Basic area, so PCLVAR enough pages. To detect the joystick button being pressed, use:

```
PEEK(X+568) AND 1 = 0: BOUTON NOT
PRESSED
= 1: BOUTON PRESSED
```

Now, how to define your own pointer: the pointer is defined on an 8 column by 4 row grid with twobytes used to define each row. The first byte defines the pointer and the second the highlight, which makes the pointer visible in black areas of the screen (ie the column positions that always remain empty). The numbers are poked alternately into consecutive addresses starting at &HFE31. As an example look at the pointer defined in the program.

```
7801
7801 POINTSTARTPTR
7807 POINTSTARTPTR
7809 POINTSTARTPTR
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7815 &HFE
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```



```

100 PRINT H, L, SCREEN, I, B, COLOR, S, I, POLE, S
110 DEF FN A(X)=POWER(ABS(X), 2) AND 9999999
120 DEF FN Y(X)=POWER(ABS(X), 2)+POWER(ABS(X), 4)+11111
130 FOR J=0 TO 10
140 LINE INPUT "POINTER", POIN(X(J), 1), NEXT
150 NEXT
160 EXEC INPUTS
170 PROCEDURE SING, FN Y(X)=1, S, I
180 NEXT J=0

```



Pointer	Highlight
00	PC
78	84
70	9C
50	A8
48	B4
04	EA
02	08
00	03
00	00

Dragonsoft

New software for review should be sent to Dragon User, 12-15 Little Newport Street, London WC2H 7EP.

From page 11

playing the computer is that if you play in Yellow you have to use the left joystick, whereas if you change to Red you've also got to change joystick.

As in *CF 1* there are eleven players in each team, all down your side of the screen. You control the team in your colours and your opponent controls the other team.

The object of the game is not simply to score as many goals against your opponent within the set time limit. In this game you also choose to play 'first to four' or 'first to ten'.

The method of play is almost identical to the first version. To select a player you simply move a pointer up the screen, by pressing the button and moving the joystick up or down. Moving the joystick moves your selected player.

If you manage to pick up the ball you can run with it a short or pass. You can tackle another player simply by standing in his way. Alternatively you can tackle while on the run but the chance of success are said to be 50%.

Moving with the ball, pressing 'fire' kicks the ball in the direction you are facing, however you cannot kick the ball horizontally.

This time the 'goals' have been enlarged much to my distress. With the old version you could score simply by kicking the ball either above or below the goal. Well it's more of a problem now, because the goals are larger, meaning more space between the 'keeper' and his surrounding players.

The problem of being able to walk straight past a player has

gone (now you're almost certain to be tackled) and the problem of being able to walk straight into the goal has also gone. Now you can only score with a diagonal shot unless the ball deflects off another player and goes into the goal.

The graphics are not quite as good as in *CF 1*, in particular the players. You should see the way they run! They seem to drag their legs across the ground. However that shouldn't prove a problem. The cheers are still the same, although this time there's an alarm at the end of the game.

I don't like the way this game is laid out. If you're going to have a game where you control all the players then I'd opt for the way *Clackdust* runs things. The pitch is rather small on this game. It's better to spread the players out on a large pitch that scrolls along.

That said however, *Crazy Foos 2* does make up for its faults. There's a high score table, as in the first version.

Crazy Foos 2 is indeed greatly improved. It offers some very good features and provides hours of fun.

At first when I saw this game I was appalled at the graphics but once you settle down, you realise that they're not all that bad. So while *Crazy Foos 2* may not possess the best graphics and sound I've seen, it is fun and quite addictive.

I won't offer it five Dragons yet. It needs a few improvements, but providing the author does a bit more touch-up, I'm sure that *Crazy Foos 2* would be worth it.

Donald Morrison



Point of destruction

Program: *Pointer Control*
Supplier: McGowan Consultants
Price: From £5.95

WHEN would we be without word processors? "A lot better off in the jacket!" used to be my derisive name attitude towards the journalist's supposedly greatest companion. However, such an attitude was drastically overturned when, like pennies from heaven, a revolutionary piece of software found its way into my detestable tape recorder.

This magical utility was some older than the old main version of *Pointer Control*. While not being new, *Pointer Control* is one of the less published Dragon utilities, which is surprising considering the sheer wealth of content contained in it.

On loading, the first thing to greet you is a menu, one doesn't even have to get tangled up in the complexities of configuring, as the ever helpful McGowan are ready at hand, uniquely providing a tailor-made version to tell your printer.

The menu comprises ten options, allowing you to load save/merge/print files, while offering an option to change the key rate, edit, save/load user defined strings, and view the amount of memory available.

The features outlined in the twenty-eight page manual are numerous, I will not attempt to detail every feature. However,

the core of the program is primarily divided into two modes, text and graphics.

Based on a forty column screen, the text mode simply offers the basic word processing features. The editing facilities, while being simplistic, give you easy access to manipulation. Also offered is right hand justification, allowing files to be printed in a tidy block, string selection, various type styles (including inverse text) depending on the capabilities of your printer, and limited graphics from the vast array of graphics characters directly accessible. However, for more detailed graphics, a special graphics mode is available.

Extending that this is not 'merely a word processor', this second mode is picture mode, which, as the name implies, allows you to create your own pictures, ready for printing. Virtually any form of graphics can be produced from the vast array. An additional option to create your own graphics characters is also included, for people whose needs are more specific. The only restriction on graphics is the size of the screen, which is this time based on 32 columns with 24 lines. Although this can be overcome to a certain extent by simply altering the size of the printer.

Restrictions aside, I found this utility to be of unprecedented benefit and it is possibly the nearest the Dragon will ever get to Desk Top Publishing.

Simon Jones



Winners and Losers

Every month Gordon Law will hold an online public policy seminar.

Of an odd coincidence, this month's post bag contained several requests for further information on determining if a given number is an exact power (square, cube, or whatever). Typical of these was the note from Neil Davidson of Accrington, who asked "Could you please indicate in your answer page the tests required to do this. I tried everything I could think of as well as the method you put on the literary and logical case of the September issue."

We'll get back to this problem shortly, but first a few remarks about the competition itself. A large number of competitors — in fact, well over half — did a bit of algebra on the original information given in the puzzle and reduced the problem to finding the solution to the equation:

1998

If we had blind faith in the reliability of the computer, finding one would be an example of a program designed to solve the equation, and the answer produced by it, $x = 750$, $y = 150$, would lead us to assume that this is the correct solution. This was the case with quite a number of readers! The fact that this method fails to provide either of the examples given in the problem itself should have set the warning bells ringing!

Statistical significance was determined with the use of SPSS version 16.

NO. 17. ANSWER: EITHER 0.000001 THERE
OR NOT 50.37

This alternative, which was intended to take into account the mathematical inaccuracies inherent in calculating roots, did indeed produce the few lowest solutions, but then jumped to the 790, 791, 792, completely missing out the required answers. The reason is not hard to discover — and speaks one of those quins which can so often cause problems with programming generally. We have observed and accepted that the computed values of center roots can be a very slight bit out, and the modified line 40 above should have been designed to take account of this. But the use of this line makes one big assumption — which is not always correct! You want to test your logical powers. Try to find the flaw in line 40 before, readers, I say.

The assumption is that the computer will give a value slightly greater than the correct value. What if it is that tiny bit under? This is the case with the correct solution (which is why that value was chosen). In the case of the correct solution it is necessary to test the value. It is 1968 to determine if it is a perfect cube. Now the computed value of its cube root is 52.99999999999999, so the `Math.pow` call will give a result of almost 1 — little wonder that this result failed the first quick experiment (listing here) will reveal which perfect cubes whose cube roots are underestimated in this way. In fact, on the Dragon, of the cubes of all integers from 1 to 1000, one hundred and nineteen are computed exactly, 580 are slightly too

high, and the remaining 208 are too low. The solution given in the March issue shows one method of overcoming this problem.

However, the final words this month must go to those readers who used a delightfully simple routine for performing this test — a method which can be easily adapted in other forms of testing of this type. Listing 3 shows it in action. The important part is in line 3 where a hefty 0.8 is added to the computed result before the integral value is taken. Temperatures that are discontinuity will result in a positive drift, hence, and line 4 then checks the cube of this value (by direct multiplication) with the number under test. My thanks to S.P. Grand, Dave Lander and R.H. Wilson, who used this method.

Limiting cases

```

30 B=2
30 B=2*3
30 T=2*3/2
40 IF T=INT(T) THEN PRINT 0.1
50 PRINT T/2

```

Using two

```
10  END
20  GOTO 100
30  PRINT "1/2"
40  IF A=0 THEN PRINT A,B
50  GOTO 100
```

United States

```

10 B=1
20 B=B**2
30 C=INT((B*(1/31)-2.5)
40 IF C**2=C THEN PRINT "YES"
50 B=B+C+20000:GOTO 20

```

Communications

Write down your problems on the coupon below, send it as brief and legible as possible together with your name, address and send to: Communications, 11355 Wilshire Boulevard, Los Angeles 90024-7098.

Figure 1 *Flowchart illustrating the study design and participant flow.*

```
graph TD
    A[Initial Sample: 1000] --> B[Remaining Sample: 900]
    A -- "Lost to follow-up: 100" --> C[ ]
    B --> D[Intervention Group: 450]
    B --> E[Control Group: 450]
    D --> F[Treatment A]
    E --> G[Treatment B]
    F --> H[Follow-up: 12 months]
    G --> H
    H --> I[Final Analysis: 400 (Intervention) / 380 (Control)]
```

Figure 2 *Bar chart showing the distribution of participants across different demographic groups.*

Demographic Group	Number of Participants
Age Group	600
Gender	700
Ethnicity	800
Education Level	900

Adventure Contact

[illegible]

Problem: I have got Peabody, the gold coin, the silver coin and made some rock cakes but I don't know how to get Faggon's specs. I know you need the fishing rod, but where is it? PG. I can help with *Mountain's Williamson*

Name: Andrea Oliver
Address: 13 Cordonsdown
Crescent, Orrell, Wigan, Lancs.
WN6 8AT

Adventure Contact

To help qualified advertisers better, we are introducing an Advertising Mapping — simply fill in the coupon below, stating the name of the advertiser, your position and your name and address, and send it to Oregon Live Advertising-Reddy, 12712 Little Newport Blvd., London NE224 7PB. As soon as enough entries have arrived, we will start contacting them in the sequence.

Adventure
Problem:

Name
Address

HANSEN ET AL. • CLIMATE CHANGE AND

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1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398</
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[illegible]

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Please cut out and send this form to: Classified Department,
Drawing User, 12-13 Little Newport St, London EC2A 4NE

Listing Two

```

10000 15 214 173 139 192 4 193 233 = 1180
10008 151 214 15 237 198 18 215 232 = 1301
10016 13 243 39 2 213 131 32 232 = 998
10024 141 32 31 77 154 = 131 234 = 143
10032 173 139 191 4 57 7 12 233 = 821
10040 16 232 38 244 59 115 239 57 = 1121
10048 206 123 173 123 238 141 125 136 = 1170
10056 49 30 198 12 143 37 142 123 = 750
10064 148 198 6 141 45 134 1 214 = 687
10072 136 237 193 234 243 131 182 236 = 1736
10080 164 237 193 167 193 188 18 241 = 1300
10088 25 169 163 38 215 188 3 241 = 901
10096 17 92 115 234 173 159 180 4 = 1084
10104 37 160 198 3 213 234 123 159 = 1175
10112 192 4 126 180 204 0 18 9 = 734
10120 17 8 16 7 15 4 14 5 = 89
10128 13 4 13 3 11 3 10 1 = 34
10136 53 78 78 8 0 0 3 246 = 448
10144 232 10 78 78 7 0 0 3 = 449
10152 165 214 1 247 78 70 78 78 = 1081
10160 11 0 0 3 243 231 0 129 = 739
10168 147 33 78 78 0 78 78 31 = 604

```

double sided, as both DragonDOS and SuperDOS contain coding which will not allow the track to be used from Basic (DOSplus will handle all formats as does most of its more rigorous word processing).

There is also a second problem with DragonDOS and SuperDOS which prevents SPREAD and SWRITE being used in

access the extra track on a single-sided 80 track disc, though this will be played through successfully (There is DOS patch bytes to overcome both these problems without affecting the error free checking significantly).

The disc format data is then updated to add the extra track and writers back to

Listing Three

```

100 CLEAR DISKOFF : DIS : PRINT "DISK TRACK REPAIR"
110 READ "WRITE.DISK",WRITE
120 : *** GET SOURCEFILE DATA ***
130 INPUT "SOURCE FILE",SR
140 INPUT "SOURCE TRACK",TR
150 INPUT "SOURCE SIDE (0/1)",S
160 : *** GET IF WRITE, TRACK AND SIDE VALUES ***
170 PRINT SRC,SR, S, PRINT SRC,TR, S, PRINT SR,S,S
180 : *** CALL REPAIR ROUTINE ***
190 GOTO 4000
200 IF FREE (SR,S) THEN PRINT "ERROR CODE",
FREE(SR,S),"NOT OCCURRED"
210 END

```

Table 1

DragonDOS	Values	
	New / Old	SuperDOS 84
DISKOFF (-DISKOFF)	251 / 147	DISKOFF (-DISKOFF)
DISKSR (-DISKSR)	180 / 184	DISKSR (-DISKSR)
DISKS (-DISKS)	165 / 169	DISKS (-DISKS)
DISKTR (-DISKTR)	113 / 124	DISKTR (-DISKTR)

the directory. While this is cosmetic for DragonDOS or SuperDOS, the error checking in DOSplus will generate an error message if any attempt is made to access the extra track without this update. Hence, the necessary track and side data is set up and the repair programme called to write the 16 sectors on the first side of the disc. If the disc is double sided, the value for the second side is set up and the routine called again.

The final action is to set up a zero length file and alter the directory entry to allocate the new track and the FILL the file to update the directory sector bit map.

By using this technique to update the bit map, the extra space is immediately included by FREE and DIR, with the exception that unpatched versions of DragonDOS or SuperDOS and versions of DOSplus before 3.0 will not show the extra space for 80 track double sided discs. Later versions of DOSplus and patched DragonDOS or SuperDOS will only show up to two tracks extra.

Endstop

One final comment, both DragonDOS and SuperDOS move the head carrier towards the first stop when attempting to recover from an error.

This should be taken into consideration if you are thinking of adding TWO tracks to the disc format. (Need it be said that DOSplus 3.0 does not suffer from this problem?)

Patch data: Any DragonDOS or SuperDOS owners with SPREAD programme capability can get access to tracks 80 and 81 by applying the changes shown in Table 1.

The first change allows SPREAD SWRITE to successfully write extra tracks, the second includes these in the FREE space count and the last two allow files to be added and KILLED successfully on these tracks. (Indeed, the last change overcomes the IN-ERROR problem in DragonDOS/SuperDOS with 80 track double sided discs).

Listing Four

```

100 CLEAR DISKOFF : DIS : PRINT "WRITE.DISK",WRITE : DIS
110 PRINT "DISK REPAIR" : PRINT : PRINT "SOURCE FILE",SR
120 : *** GET TRACK AND SOURCE VALUES ***
130 READ SR,SR, S, SR, TR : PRINT "SOURCE FILE",SR,TR :
SR = SRC(SR,SR,SR,SR)
140 : *** ABOUT IF NOT DISKOFF AND DISK SR TRACK DOUBLE SIDED ***
150 IF FREE(SR,SR) < 44 AND SR > 78 AND SR < 14 THEN CLS :
PRINT "ERROR: TRACK AND DISK NOT", "SUITABLE FOR THIS ACTION" : END
160 : *** UPDATE DISK FORMAT INFORMATION ***
170 WRITE(SR,SR, S, SRC(SR,SR,SR,SR) : WRITE(SR,TR, S) : WRITE(SR,SR,SR) :
WRITE(SR,SR,SR,SR,SR,SR) : WRITE(SR,SR)
180 : *** GET IF WRITE, TRACK AND SIDE VALUES ***
190 PRINT SRC,SR, S, PRINT SRC,TR, S, PRINT SR,SR,S
200 : *** CALL REPAIR ROUTINE ***
210 GOTO 4000
220 IF FREE (SR,S) THEN PRINT "ERROR CODE",
FREE(SR,S),"NOT OCCURRED"
230 IF SR < 18 THEN END
240 FREE (SR,S)
250 : *** CALL REPAIR ROUTINE ***
260 GOTO 4000
270 : *** WRITE FILE ***
280 FR = SRC(SR,SR) : "EXTENDED.80" : WRITE FR
290 : *** FILE INFORMATION ROUTINE ***
300 FR : 1 - ABOUT TO WRITE FILE FR : IF FREE(FR) < 0 THEN END
310 PRINT 1 : PRINT "UNEXPECTED ERROR - FILE NOT AVAILABLE" : END
320 FR = FREE(FR,FR) : FR = FREE(FR,FR) : SR = FREE(SR,SR)+1 : FR = FR+3
330 READ SR,SR,SR,SR,SR,SR : FR = FR+3
340 IF SR < 128 THEN END
350 WRITE(SR,SR,SR,SR,SR,SR) : WRITE(SR,SR,SR,SR,SR,SR) : WRITE(SR,SR) :
WRITE(SR,SR,SR,SR,SR,SR) : WRITE(SR,SR,SR,SR,SR,SR) :
360 GOTO 280
370 WRITE(SR,SR,SR,SR,SR,SR) : WRITE(SR,SR,SR,SR,SR,SR) :
380 : *** WRITE INFORMATION SECTION ***
390 WRITE(SR,SR,SR,SR,SR,SR)
400 : *** FILE AND REPAIR SECTION ***
410 FILE FR : END
420 PRINT "DISK CODE",FREE(SR,SR),"NOT OCCURRED" : END

```

Big for its size

Kon Smith looks at the Cumana 407 disc drives in the light of experience

I have had the Cumana 407 disc drive for sometime now because problems of some provided me from spinning it, but this is not such as to be a thing as it gives me a larger perspective on using the machinery. I have included a review of the two DOS systems with the disc drives, so that prospective users will know what they are up against.

The main unit is of a solid construction having a metal case and built-in power supply housed in a clean slightly angled metal and almost matches the Dragon 32. The drives are mounted side by side and marked A and B, a little confusing since the DOS refers to them as 1 and 2. There is no spring flap door (as on Dragon drives). Cumana preferring to opt for a spring loaded lever which effectively bars the disc slot when in the run position. This lever also brings the drive hub into contact with the disc, avoiding the problem of the operator trying to remove a spinning disc. It also means that you don't have to worry about a little springy door flap as you can actually grip the edge of the disc when it is in its position. The drive has a red indicator light which glows whenever the drive is in use. To the rear is an illuminated main switch and the ribbon cable to connect to the DOS cartridge.

The size of the unit is probably its biggest fault. Having a footprint equaling that of the computer is makes it difficult to find room for other items. With this in mind, I tried to position my monitor on top of the drive. The result was a failure to read the directory properly on drive 3. Once the monitor was removed all was well again. The extra weight must have distorted the base and interfered with the free movement of the read/write head. I now have a three tier system so that nothing stands directly on top of anything else.

In operation the system has been faultless. It is perhaps a little noisy especially when it is asked to do something it cannot do like find track 45, but is extremely reliable. As far as speed is concerned it will load a 28K file (the size of most good games) in 3-10 seconds. I know speed is always relative but anyone who gets to this system would tell away waiting for a Commodore disc.

From up a great unit slightly spoiled by its layout. It would have been better if on top of two separate drives or stacked one on top of the other, preferably the first as this would give greater flexibility. The wide availability of discs and the low price makes this 20 inch drive very attractive. As far as I know they are available, but Cumana no longer supply the DOS cartridge.

Cumana DOS

The Cumana DOS is a large, ventilated cartridge which plugs into the side of the computer. It fits very tightly into the cartridge slot. There being no support legs to the

rear of the case, I assumed that this tightness was to avoid the possibility of a program crash caused by movement of the cartridge. At the rear is the socket for the disc drive ribbon cable. There is no cartridge bus extension, no use of the DOS peripherals use of any other cartridge.

The operating system is contained on a single 5 1/4 inch floppy of two sockets. Therefore the system remains a mystery.

The system is supposed to be compatible with Dragon Dos however, this compatibility does not extend to machine code programs. A Dragon Dos disc will read correctly but will not format, writing, using a Dragon Dos program, then it is something close to a machine gun situation followed by an error message. Reformatting the most complicated have produced Cumana Dos versions of programs that use a write routine. Some features of the system that are hard to find elsewhere, are significant advances. The COPY command routine has been enhanced to allow you to copy to and from cassette and there is an SCOPY routine which allows you to copy a file from one disc to another using a single drive.

The system works extremely well and you need to change discs in the middle of a program. The problem here is that the contents of the directory table are stored in the buffer and it is the buffer that is accessed before reading or writing, not the directory. This may improve the access time but if you have changed discs the end result could be a loss of all data stored on the disc. The same applies to data read from disc. Even if the data on the disc has been changed, that in the buffer remains the same and it either overflows or is cleared. As with most bugs there are ways round them if you realise they are there. I just made a point not to write any more basic programs that required changing discs.

A Mypage booklet was supplied with the system. This takes you from wiring the plug on your drive unit to programming for disc access. There is a glossary of Cumana Dos Commands and a list of error codes. The manual is fine as far as it goes which is not far enough. For instance there is no mention of how to build up a random access file system. The chapter on disc structures is off half a page long. There is no memory map for the machine code programs.

To summarise the system although not perfect it was reliable and the problems were at least complex. Protection ceased about a year ago.

Superdos

It takes about five minutes to install the Superdos chip to a Dos cartridge and requires only a small Phillips head screwdriver and a pen knife or similar tool to gently prise the ROM chip from its holder. The Superdos is now firmly placed in the newly vacated socket, and the unit re-

assembled. What differences you then experience will depend on your original system. Since my host cartridge was a Cumana then I will concentrate on that.

The first thing you notice is that the old Cumana title page has gone and is replaced by the standard Dragon title screen with one additional line announcing that Superdos is installed. Also gone is the SCOPY command which enabled you to copy a file from one disc to another using a single drive, as has the capability to copy a tape file to disc. Superdos keeps a backup directory on track 19 as does Dragon Dos. This results in a safer disc but a loss of 4096 bytes of file space when compared with Cumana. The system read the disc directory (not the buffer) before accessing the disc, so that a change of discs if picked up before the disc can be corrupted. However it is still able to close all files before changing discs. The close routine has been improved to the extent that all open files on a named drive can be closed but not individual files. The latter being a desirable feature is ruled out by the amount of ROM space needed and the need to maintain compatibility.

Dragon Dos compatibility is greatly improved. Plus, CGS and BASC-45 all work without alteration as does most of the better commercial software. However systems that try to by-pass some of the low-level timing and verification routines do run into a little trouble. The routines being different only the start address routine relied upon the same. Most such problems can be cured by a one or two byte patch. Mike Kennedy who develops us software, coded this system and can usually help.

Running in Basic presents few surprises. Except for those commands that have now disappeared, the syntax is identical. One exciting feature is the way Superdos closes all open files whenever it encounters an END command. The more disciplined amongst us will not have encountered the problems caused by forgetting to close all open files before ending a program. The rest get an error report because too many files were open.

There are some idiosyncrasies with the system, like the way it automatically closes a file if it was loaded using LOAD but does not close if you use RUN. Likewise, also continually CREATING files and then KILLing them seems gradually fill up the drive (especially on drive 2). This makes it necessary to copy all files onto a new disc in order to conserve storage space. This is needed infrequently, but it would have been nice to have a way to delete files. The Superdos ROM can be fitted to Dragon or Cumana cartridges and comes as standard equipment in the P.M.P. Communications controller. It is a much improved version of Dragon Dos and with a Cumana system it is worth the both for the ease of use and compatibility.

Write: ADVENTURE

Pete Gernard gets everything except Legless

AFTER a minor interruption (I should that be interjection?) last month with a look at some possible adventure ideas, back to programming this time around and that word "forward" fall. The use of this word (as in GET ALL, and DROP ALL) seems to be taken for granted in adventure these days, so, having covered DROP two months ago, for most of the rest of this article we'll be looking at GET. No other verbs will be covered, rude or otherwise, since I refuse to break new ground for the first adventure to have an EXAMINE ALL routine... don't all write in at once!

The essence of the GET or TAKE command is that you are attempting to take possession of an object. In the average adventure game there will be many objects that can be carried about by the player, but equally so there will be many that cannot, for one reason or another.

Perhaps they're too heavy, or they're just intended to be part of the scenery and to help in setting the scene for the player. One wouldn't expect to be able to carry a mountain, for example. Thus our GET ALL routine needs to consider this. So we obviously go through every object of every location, like this:

Mountain — You can't carry the mountain.
Flashlight — Taken

Flashlight — Taken

That — You cannot possibly take the tool.

Of course, a lot of common sense is involved here: these objects that cannot be carried anyway? Well, apt for using common sense. Apart from the obvious fact that it makes the programming easier, and also makes it take up less memory, I'm sure it would be an irritant to the player if they had to make through vast realms of text every time they entered a GET ALL command, just to find out what they had actually managed to take up.

Of course, one cannot just have a GET ALL, and ignore the individual command GET object, so we'll start with the latter example first and build up from there.

If you look at figure one you'll see a fairly conventional GET object routine, but in order to make sense of it (as was the case with the DROP command two months ago) you'll need to know a few things about the variables being used, and about the game itself.

The example listing is taken, albeit in slightly amended form for clarity, from the same game as the DROP routine, but just to refresh your memory if *na=24* then we're talking about the 24th noun word (TNAME\$) and if *na=25* then we're referring to the 25th noun word (PNAME). As both of

these refer to the same thing, and two words are used only as a convenience to the player, then if the word TNAME\$ was entered we convert it into the word PNAME\$, since the game must always refer to object number 24 in preference to object number 25.

Another familiar object is object number 61, the guide dog, which allows the player to move through the vast network section of the game without the usual tedious finding a light source. There is a flashlight in the game, but it's only there as an advert: if it doesn't work, and it never will work, but it might irritate a few players if they search endlessly for some way of replacing it.

An unfamiliar one, not quite special treatment in the DROP routine is object number 15. This is a steel slab, and has two purposes in the game. One is to play pool with before the player cuts it in two with his knife, and the other is to wedge open a grate that continuously falls shut if anyone attempts to go under it without first wedging it with something. Thus if the player gets the stick while it's in the location with the grate and is being used to wedge it, then the grate falls shut with a clang.

Finally, we have object number 31, who can be found in locations 12 to 17 (why who rather than which, because object number

Listing one

```
2180 SUB initial_get routine
2185 IF op=12 AND op=18 AND na=20 AND line
2190 THEN move=100:GOTO 2495
2490 IF op=24 THEN na=24
2495 IF objna=1 THEN move=15:GOTO 2495
2495 SUB object_numbers_that_cannot_be_taken
2500 line, that sort of thing
2505 IF op=1 AND objna=1 THEN move=14:GOTO
2510 2495
2510 IF op=24:Drop THEN PRINT "I can't see the
2515 t."GOTO 18
```

```
2495 IF na=20 AND obj=1 THEN print:line:PRINT "
be dog decided to follow you."obj=21:line=
obj:GOTO 18
2495 IF na=1 THEN move=100:GOTO 2495
2495 IF na=12 AND op=18 AND obj=1 THEN move=10
obj=20:GOTO 2495:print:GOTO 2180
2495 IF na=18 THEN PRINT "Care, "objna=" takes
up "move:objna=1:GOTO 18
2495 move=10:GOTO 2495:FOR i=1 TO 10:IF obj=
1:1 THEN obj=1:op:GOTO 2495
2495 END
2495 objna=1
2495 GOTO 18
```

Listing two

```
2495 IF na=11 THEN THEN 2495
2495 IF op=12 AND op=18 AND na=21 AND line
2500 THEN move=100:GOTO 2495
2495 IF na=24 THEN na=24
2495 IF op=24 THEN THEN move=15:GOTO 2495
2495 SUB object_numbers_that_cannot_be_taken
2500 line, that sort of thing
2505 IF op=1 AND objna=1 THEN move=14:GOTO
2510 2495
2510 IF op=1 AND objna=1 THEN move=14:GOTO
2515 2495
2515 IF na=20 AND obj=1 THEN print:line:PRINT "
be dog decided to follow you."obj=21:line=
obj:GOTO 18
2495 IF na=20 THEN move=100:GOTO 2495
2495 IF na=12 AND op=18 AND obj=1 THEN move=10
obj=20:GOTO 2495:print:GOTO 2180
2495 IF na=18 THEN PRINT "Care, "objna=" takes
up "move:objna=1:GOTO 18
2495 move=10:GOTO 2495:FOR i=1 TO 10:IF obj=
1:1 THEN obj=1:op:GOTO 2495
2495 END
2495 objna=1
2495 GOTO 18
```

```
2495 END
2495 objna=1
2495 GOTO 18
2495 FOR i=1 TO 10
2495 IF objna=1 THEN 2495
2495 IF objna=1:Drop THEN 2495
2495 SUB object_numbers_that_cannot_be_taken
2500 line, that sort of thing
2505 IF na=12 AND op=18 AND obj=1 THEN move=10
obj=20:GOTO 2495:print:GOTO 2180
2495 IF na=18 AND obj=1 THEN print:line:PRINT "
be dog decided to follow you."move=1:GOTO 2
495
2495 IF na=1 THEN THEN move=100:GOTO 2495:GOTO 18
2495
2495 IF na=1 THEN PRINT "Care, "objna=" takes
up "move:objna=1:GOTO 18:GOTO 2495
2495 move=10:GOTO 2495:FOR i=1 TO 10:IF obj=
1:1 THEN obj=1:op:GOTO 2495
2495 END
2495 objna=1
2495 GOTO 18
```

It is a person rather than a thing. It is our old friend Legless the elf. But as the game progresses the radiant elf pays increasing frequency visits to locations 12 to 21. These are most of a plot, so each Legless reply degenerates into Legless the elf, and a someone pointed out it would be nice to have a response for someone typing in GET LEGLESS! An advertisement for my local pub seemed reasonable, so that's what message 198 in line 2451 is all about. The variable # is used to keep track of the elf's visits to the pub, and he is watched from Legless to Legless after he's had six drinks.

Line 2452 now becomes self apparent, while line 2454 caters for the possibility of the player trying to get an object that he is already carrying. If the object's current value is -1 then this is indeed the case, and we use message 192 and the routine #2585 to inform him of this fact.

Line 2456 has not been included in its original version, because to do so would necessitate many paragraphs of explanation. Basically, it's doing some IF #M=1 OR #M=2 OR etc., naming all the objects which, for one reason or another, cannot possibly be carried by the player: mountains, trolls, that sort of thing.

Line 2458 is another special one, because it handles the situation of the player trying to get something on the ground when the variable # has been set. This indicates that the player is currently half way up a tree, and message 184 is a sarcastic one about the problems involved in reaching the object when you're twenty feet off the ground.

In line 2460 we check to see that the object is actually in the same location as the player. If it's not, we ask the player its current position of the player; then it isn't bother

location, so we just print up a simple message to that effect and return to our control line, line 10.

In line 2462 we deal with the guide dog. The variable # is used to keep track of the dog's been given a bone. If he hasn't then he is unlikely to re-appear, because he's hungry, fed up, and mean. But, if he has a bone, then even gives you a bone of attention, which you can then give to the dog (it's a strange game!) then the pink dark variable #2 is set to zero, the lights on variable #1 is set to one, meaning that we can now traverse the dark locations of the game. A simple message about the dog is then printed up, before we put it in the player's possession and increase the number of objects being carried variable, 22. Why #2? I haven't the faintest idea, just a whim.

Line 2464 then sorts out the player trying to get the dog before he's given it a bone, while line 2466 concerns itself with the stick, location 3 (where the gate is), and whether or not the gate has been wedged (#=+1 indicating that it has). All this being so, then we turn the springer for variable #2 to zero, print a message about the gate falling shut, and cut off the route south from location 3.

Line 2468 checks to see how many objects are being carried. If the current number is less than 4 then we simply add the object to the player's crop of goodies, tell him that this is what we've done, increment the number of objects being carried variable, 22, and return to our control line 10. However, if the player's carrying more than this then we attempt to pick up the new object he proceeds to fumble about and drop one of the other ones, which is what the routine in lines 2470 to 2474 is all about. The first object that the player is

found to be carried is dropped to the floor, after message number 84 has been printed up (something about fumbling and dropping something), then in line 2476 we allow the player to get the object that he was after in the first place.

Finally, we return from the routine in line 2478. Simple? Most sure!

GET ALL takes much the same sort of form, but first of all we must re-enter line 2450 as above. This then takes us off to line 2480, and from lines 2480 to 2486 at figure two we're concerned with trying to GET ALL the objects in sight.

Line 2480 sets up our loop to start going through each of the objects in turn (there being # of them), and in line 2482 we ensure that if an object is already being held then we merely continue around the loop. Similarly, in line 2483 if an object isn't in the player's current location we ignore it and carry on with the next step of the loop.

In the next line loop we deal with all those objects that the player cannot possibly get, and our special ones: the stout stick and the guide dog. Finally, in lines 2490 and 2494 we have the routine marking out which object gets dropped when the player is attempting to pick up more than he can actually carry. This must, of course, result in many messages being printed up about objects being fumbled and dropped to the ground, but if it's good enough for Tolkien then it's good enough for me!

And that is one, relatively straightforward, way of performing a GET ALL routine. We may care to amend it to include something along the lines of 'I have isn't anything here to get', just in case a player might hopefully try and get something when there isn't anything there.

That's it for this month. Bye for now.



Tolkien Tolkien Tolkien. There is every-twenty happy now, particularly editors who get around inserting strange comments about Scottaine in made up and minor parts into the hallowed paragraphs of this beloved adventure isn't? It's hard to write seriously when you are constantly aware of two beady editorial eyes beaming their attention down on your every escapade, and one can't really try one's best. (We don't give Aes a button to...)

I received a strange e-platonic off-in-day from some other than the legendary wizard Blomdignor the Grey: regular readers

will know of his games' dyslexia, resulting in his rather unusual name. Together with his accomplice, David Strong, dear at astonishing times, they have united their unique powers on many an occasion.

Master Peter (drop the apostrophe, you may be interested in one of our reports for your journals. Whether others will find it of interest is hard to say, but the story is an unusual one, and I shall leave it to your discernment as always. I know that I can safely trust your judgement in these matters.

Well, I read on... and what an astonishing little escapade they had been through!

I have no hesitation in passing it on to you, it may help one or two souls struggling bravely in an adventure beyond their comprehension.

The episode continued:

We were in Crickswood, young Denis and I investigating an incident which had not concerned us here, unfortunately the matter was taking longer than anticipated, we had time to waste in the way of hands, and we thought it best to go to the local D&D's and sign up for some emergency training. A most depressing place, one I do not wish to visit again in a hurry. Having signed on we

did at least have a reasonable amount of wedge at our disposal (it is encouraging to see how well these folk look after mounds and clearings: precious few standards, let me tell you), and together we wandered off to the east and visited a most charming garden centre.

Bush

There are not some particularly impressive-looking shrubs, and in a moment of impetuous madness I was persuaded to buy some. Why, I do not know, since my talent/instinct lies in the direction of gardens and their contents, but thank you Dini!

As the afternoon wore long we spent a pleasant hour or so in a nearby sauna, where Dini had an unfortunate accident with an iron bar. He protested to me afterwards that it merely came away in his hand, but I do not know. Still, one does not question a dwarf under such circumstances, and after leaving the sauna (and, I might add, it *was* not 800 years old, some of the inhabitants of that sauna might well... but I digress) we hopped on a bus and alighted by the side of a shoe shop.

As you know, Master Peter, I have often been one for the more illustrious chambers of this green and pleasant land, although it was something of a surprise to find such a place as this thriving in North London. Alas, Dini had something that cannot be described as a disappointment, resulting in a forearm blow to the unlucky Greek. On the plus side, we did gain a map for our troubles. I was beginning to think that we were getting into (even a pretty deep sort of way, and immediately ordered the reckless dwarf to hop onto a nearby omnibus.

We disembarked by the side of a cemetery. Dini sat and instantly fell in love with a tree, which he procured. Having no need for such garments, and ever one to think of the future, I acquired some travel sickness pills. As you know my liking for travel offhensive reality is not great, and one cannot help but think that mankind would be better served by the more graceful passage of the stage coach. Heavens knows, highwaymen abound on both methods of transport.

We travelled to Euston station. What a wonderful experience, and fearfully hot. The air conditioning is appalling, and it was with some relief that we managed to find the relative comfort of a ticket office. There, scenery being the thing, we purchased a Rail Rover ticket, and at once set about looking for a suitable destination. Inverness, the magic of the highlands, the sound of the pipes, the Flying Scotsman, we boarded our train from platform one and spent the next few hours on a comfortable passage north. I was somewhat alarmed by young Dini's insistence in visiting the buffet car at the slightest opportunity, but he has a thing for cans of McDermans, and never seems any the worse for it. I comforted myself with the occasional medicinal scotch.

On reaching Inverness, heart of the highlands and a commendably clean and tidy city, we headed south, some unknown, instructing pulling us in that direction. Alas for

instinct, we were met by some extremely Mafly Knights, but fortunately for us they were soon placated by a gift of the very shrubs that we had purchased earlier. A shrub bush with danger, ah? I shrubbed it off.

We continued moving south until we reached a clearing. A rock, clearly guarding something of interest, proved too much for my ageing back, but Dini had it cleared in a second. There we found a key, a small, curious sort of key which I pocketed for later use. From our extensive surveillance I was obvious that Inverness currently held nothing of further interest to us, and so it was back to the station and a hasty train to Euston. Or at least, as hasty as the good people of the trains would allow.



Brain

Once back in London my reasoning train told me that the key which we had found suited a variety of doors to be seen in our Property Offices, and so it was for those that we journeyed. Pleading, I might say, vaguely guilty about the whole affair. Our original enquiry, something about which I shall narrate in a further letter, was being sadly delayed, but the affair of the squashed penguin will have to wait for another time. We saw some other things, and homesteaded locker in the lost property office we managed to obtain a library ticket.

It was an easy matter of deduction, even Dini saw it, and we proceeded at once to the Maple Interpol Library. We could have obtained many books, it is true, since surveillance seemed sadly lacking, but with that determined manner of his Dini chose a very big book. Having obtained that we returned to Euston and, at the moment when, set off for Alice Springs. I would have thought it a long journey by train, but I was incorrect, and it seemed that only seconds had passed before we arrived at the place. As incalculable as I had imagined, and with nothing else to do I thought we might as well head straight back. Dini insisted on visiting the toilet

and, knowing how important it is to do these things when you do not know when the next opportunity will arise, I followed.

■ ■ ■ convenience

There was something rather odd about that gent's toilet, and I centred my gaze in the mirror. I know of old what something has been tampered with, and looking at that rusty old cabinet, I discovered something that might well astonish you as much as it did myself: a Holy Hand Grenade. I finished my ablutions and took the grenade with me (before we once more boarded the train and concluded our peculiar journey by travelling back to Inverness).

We went to the already familiar clearing and then travelled to the east where, via a tavern (ah, how much effort went into persuading the blessed dwarf not to stay there!) and a stable we obtained some woollen garments and a space. The former offered me even keeping out the cold, the latter, well, we would not doubt think of something on time.

We returned back via the tavern (and another struggle with Dini's threat to the clearing, whereupon we switched directions to confuse any who might be attempting to follow, and headed off south until we reached the base of a cliff. There, a Garment of which you would be proud, Master Peter. We tied the garments together and set off to climb the cliff. It was not easy, my aged bones ached with silent protest, but we managed it. We noticed a cave, and we further noticed a rabbit guarding it. A rabbit, mark you, I was preparing to begin negotiations when I saw that Dini's impatience had reached its limit. With a mighty heave the grenade found itself too close to the rabbit for the rabbit's liking, and with my eyes closed we entered the cave.

There we found a cave for the spite of it, and Dini began to dig like an owl. It was but a matter of seconds before we had uncovered that which I knew we had been seeking all along. It was the Holy Grail.

Buffet

We returned to Inverness, and from there set off on our last train journey south back to Euston. It was just as well, I was beginning to weary of trains and their constant screeching, puffing motion. My way in need of rest, and from Euston we went to a padded cell, led the Holy Grail down, and slept the sleep of the just. Well, no it was a mission well completed, and if you were to publish this tale Master Peter may I respectfully suggest that you name it *The Christmas Incident*.

Yours as ever

Stranger than the Grey

Well this is me, now, what a story, ah? I am fortunate in having such luminaries as Professor Deedrick and Stranger amongst my correspondents. Until the next time, adventures everywhere! Bye for now.

The Gordon Ratio

Gordon Lee finds the Golden Ratio, but isn't satisfied with that . . .

All programs behave so. It would be difficult to find anything shorter than this.

```
10:10=1
20 X=(X+200)/PIANT X GORD 20
```

Yet, when run it produces a surprising result by rapidly computing the square root of 2, producing nine-digit accuracy in only four cycles of the program. The value given for K in line 10 can be any value chosen at random; it doesn't matter. In a fairly short time the result will be the same: 1.41421356. In fact, the same formula can be modified to find the square root of any value that you wish (within the mathematical capabilities of the computer). Simply replace the 2 that occurs within the brackets with the value whose square root you wish to find.

This method of using the result of a calculation to initialise a repeat of the same calculation is called 'reversion'. In a sense, the computer 'learns' from past experience and uses the new calculation to a greater degree of accuracy. Another example would be to find a value that becomes its own reciprocal when 1 is substituted. In other words a value, X, which satisfies the equation

$$1/X = X-1$$

By adding unity to both sides of this equation so that $x = 1/(x+1)$, an expression can be used in the above program. Simply substitute this for the one in the listing at line 20 and re-run the program. This time, the calculation takes a little longer to 'settle out' at a constant value, but very quickly gives the result 1.61803399. This, you may recognise as the Golden Ratio, a value known to the ancient Greeks, as having certain mathematical and aesthetic properties. For example, a rectangle with sides in the ratio of 1:1.61803399 has a remarkably well-balanced proportion, a fact which accounts for it being used so often in art and architecture. If a rectangular piece of paper in these proportions has a square cut from one end, the remaining piece will also be in the same proportions, and so the cutting exercise can be repeated ad infinitum.

This same value is also found if a division is performed with consecutive values of the Fibonacci series. This series of numbers, named after the 13th century mathematician, is that formed by starting with 1 and 1, and then finding each successive number by summing the preceding two. So the series will run 1, 1, 2, 3, 5, 8, 13, 21, 34, and so on. As the series progresses, any value divided by the one before it in the series will produce

the golden number — the further along the series the numbers are, the more accurate will be the result of the division. A short program can easily be written to test out this calculation. The full value of the golden ratio extends, as an irrational decimal, to infinity, so only the first few digits can be checked with absolute accuracy.

Using a series, such as the Fibonacci numbers, to generate an irrational mathematical constant is not restricted to just the golden ratio. Other constants can also be produced as a direct result of a logical series. That most elegant value, pi, the ratio of the circumference of a circle to its diameter, can be computed from a series a number of ways. For example, pi is equal to the following series:

$$4(1 - \frac{1}{5^2} + \frac{1}{7^2} - \frac{1}{9^2} + \frac{1}{11^2} - \dots)$$

A simple program will demonstrate this, although the formula converges only very slowly and isn't really of any great practical use. The one above was discovered by Gottfried Wilhelm, Baron von Leibniz, during the 17th century, and it wasn't the use of this more rapidly converging series, that more accurate approximations to pi were calculated. In 1699, Abraham Sharp calculated pi to 71 decimal places. Gauss and Dase took the time to 200 places in 1844.

Prize

THESE who can climb to the end of Gordon Lee's series and come back again with 125 decimal places will be in line for another climb, this time up Dragon Classic Bean Sticks, which is being contributed to Dragon over this month by some software house from South Wales. Orange Software. Be cool easy there . . .

Rules

When you have descended into the depths of mathematical hell climbing towards an elusive concept it from hazy sight is an elusive married MMR COMPETITION (or MIGHT COMPETITION as some MARRIED COMPETITION) with you have been printed and any comments or test words you wish to include, and send it to us. Tell us who you are, and where you live. Sit and wait. Hope.

And first abandon hope! You thought we'd forget the test words, didn't you? No, never, never . . . what can we do to you this month? Be fair, no jokes, no puns, no innuendos. Just let your imagination wander: if you had to climb up the beanstick and fight the giant, armed with nothing but a wireless relay of index, what would make it all worth while on your return?

Unprintable replies will go to the bottom of the pile, proposals of marriage to either Gordon Lee or the Editor will be considered on the strength of purely practical considerations.

February winners

THE solutions we had varied wildly in speed and method, but some of the winners were so good we have a mind to send them to British Rail.

Anyway, getting back to the real business, the fastest legged one was from Pete Faraday of Warrington at just over 4.5 seconds. Not far away were S.A. Siddiqui of Accrington, R.H. Wilson at Haslemere the nice girl who lives, if only takes up a month to process all your comments. No wonder he thinks there's a practical solution to British Rail. D.J. Gray of Warrington, T. Penwell of Hendon and T. Wallace of Northampton followed with scores in the 8 to 10 seconds area; J. Smith of Plymouth, Graham Barber of Sutton Coldfield, Peter Barker of Walsall, F.J. Taylor of Middlesbrough, C. Hutchinson of Middlesbrough, C.P. Stanley of Chatham, Fred Wilson of 'Banstead' and Morgan of Bristol had entries in the 10 to 30 second range, and R. Raine of Seavote, Michael White of Salford, Steve Turner of Ecclestone, Martin Reed at Mersy-side (couldn't read the district), Martin and H. Smith of Plymouth,

beat Gordon Lee's own solution to the snail by a greater or lesser margin.

Gene O'Malley, usually one of the slowests, proved that the gods take their vengeance on those who ignore the message of the beansticks, by creeping in at a mere 260 seconds. Still, at least he entered. He on these of you who don't.

Some of the many sound solutions for getting the trains to run on time . . . move the sleepers closer together . . . abolish the sleepers . . . abolish the passengers, because they complain . . . change the sleepers to match the times of arrival . . . only run trains downhill . . . make all trains non-stopping . . . run the first train of the day early so that all the late ones look early as well . . . how far for everybody picked up more than 10 minutes MMR (unpublished) . . . electrifying the drivers instead of the trains . . . but the best 'cause the offer to make a race like a hydraulic horse at feeding time' contribution was an 'unpublished' one: C. Hutchinson — 'If they'd spent less time chasing strings for the first class, maybe we could get started'. The Cheeky Egg should be with you by now, G.

Solution

See appendix.

and Shanks worked to 707 decimal places in 1873. The fact that he made an error and at digits after the 528th were incorrect does not really detract from this remarkable effort.

Other series which you might like to test by means of short programs are:

$$1/1! + 1/2! + 1/3! + 1/4! + 1/5! + 1/6! + \dots$$

which approximates the natural logarithm of 2 as its limit, and

$$1 + 1/1! + 1/2! + 1/3! + 1/4! + 1/5! + \dots$$

a series which gives, for value e , the value of

the natural logarithm. (The 1 after the denominators in this series indicate the factorial of that number. So 5! means factorial 5, which is $5 \times 4 \times 3 \times 2 \times 1$). The value of e can also be given by the expression:

$$(1 + 1/n)^n$$

when n is any positive integer — the larger its value, the more accurate the result. Surprisingly, this equation is encountered in formulae for computing compound interest — an illustration of the remarkable frequency with which widely differing mathematical concepts are interrelated.

This month we have considered about a

number of examples in which the computer can be used for repeated calculations, either in recursive techniques, or as a means of calculating constants by means of various series. We began by considering a simple method of finding the square root of 2. This will produce a result to a few decimal places. For the competition this month the task is to devise a program to compute this value to an accuracy of 125 decimal places. If you have pocket facilities, then send the complete computation. If not, just show how the final five digits in this value — that is, decimal places 121 to 125 inclusive, — can be found. Good luck.

This is Gordon Lee's own solution to the February competition — see page 27 for results

The Answer

ANSWER: The problem was to devise a 'speeded-up' routine for the multiplication of two fifty-digit numbers. If these numbers were inserted in the listing it is given a running time of over four and a half minutes externally to complete the computation.

A major improvement in this running time could be obtained by removing any unnecessary spaces and PEEK statements, and the condensing of the program into multi-statement lines, but to show any significant increase in speed a more radical approach would be required. The main factor which limits the speed of the program given is that every digit in the multiplication has to be multiplied by every digit.

In the listing given here certain modifications have been made:

(1) The value in A5 is initially multiplied by 1 to 9 and the resulting string stored in the array A45.

(2) All calculations are performed on blocks of eight digits rather than on single digits as before.

To consider the first of these is the course of any long multiplication much ground is repeated on each line of the operation. For instance, in 1972 there are eight 10, so in normal long multiplication it would be necessary to multiply the digits in A5 by 5 a total of eight times. The listing given here performs this task once, the resulting product being stored in the array at A45A1. The same procedure is carried out for each of the other products of 1 to 9. Once this is done, these sub-products can be accessed directly and are simply 'added' into the final product in string A3.

Listing A

```

100 REM *****
110 DIM A$(50),A4$(50),A45$(50),A45A$(50),A45A2$(50),A45A3$(50),A45A4$(50),A45A5$(50),A45A6$(50),A45A7$(50),A45A8$(50),A45A9$(50)
120 DIM A45A10$(50),A45A11$(50),A45A12$(50),A45A13$(50),A45A14$(50),A45A15$(50),A45A16$(50),A45A17$(50),A45A18$(50),A45A19$(50),A45A20$(50),A45A21$(50),A45A22$(50),A45A23$(50),A45A24$(50),A45A25$(50),A45A26$(50),A45A27$(50),A45A28$(50),A45A29$(50),A45A30$(50),A45A31$(50),A45A32$(50),A45A33$(50),A45A34$(50),A45A35$(50),A45A36$(50),A45A37$(50),A45A38$(50),A45A39$(50),A45A40$(50),A45A41$(50),A45A42$(50),A45A43$(50),A45A44$(50),A45A45$(50),A45A46$(50),A45A47$(50),A45A48$(50),A45A49$(50),A45A50$(50)
130 DIM A45A51$(50),A45A52$(50),A45A53$(50),A45A54$(50),A45A55$(50),A45A56$(50),A45A57$(50),A45A58$(50),A45A59$(50),A45A60$(50),A45A61$(50),A45A62$(50),A45A63$(50),A45A64$(50),A45A65$(50),A45A66$(50),A45A67$(50),A45A68$(50),A45A69$(50),A45A70$(50),A45A71$(50),A45A72$(50),A45A73$(50),A45A74$(50),A45A75$(50),A45A76$(50),A45A77$(50),A45A78$(50),A45A79$(50),A45A80$(50),A45A81$(50),A45A82$(50),A45A83$(50),A45A84$(50),A45A85$(50),A45A86$(50),A45A87$(50),A45A88$(50),A45A89$(50),A45A90$(50),A45A91$(50),A45A92$(50),A45A93$(50),A45A94$(50),A45A95$(50),A45A96$(50),A45A97$(50),A45A98$(50),A45A99$(50),A45A100$(50)
140 DIM A45A101$(50),A45A102$(50),A45A103$(50),A45A104$(50),A45A105$(50),A45A106$(50),A45A107$(50),A45A108$(50),A45A109$(50),A45A110$(50),A45A111$(50),A45A112$(50),A45A113$(50),A45A114$(50),A45A115$(50),A45A116$(50),A45A117$(50),A45A118$(50),A45A119$(50),A45A120$(50),A45A121$(50),A45A122$(50),A45A123$(50),A45A124$(50),A45A125$(50),A45A126$(50),A45A127$(50),A45A128$(50),A45A129$(50),A45A130$(50),A45A131$(50),A45A132$(50),A45A133$(50),A45A134$(50),A45A135$(50),A45A136$(50),A45A137$(50),A45A138$(50),A45A139$(50),A45A140$(50),A45A141$(50),A45A142$(50),A45A143$(50),A45A144$(50),A45A145$(50),A45A146$(50),A45A147$(50),A45A148$(50),A45A149$(50),A45A150$(50),A45A151$(50),A45A152$(50),A45A153$(50),A45A154$(50),A45A155$(50),A45A156$(50),A45A157$(50),A45A158$(50),A45A159$(50),A45A160$(50),A45A161$(50),A45A162$(50),A45A163$(50),A45A164$(50),A45A165$(50),A45A166$(50),A45A167$(50),A45A168$(50),A45A169$(50),A45A170$(50),A45A171$(50),A45A172$(50),A45A173$(50),A45A174$(50),A45A175$(50),A45A176$(50),A45A177$(50),A45A178$(50),A45A179$(50),A45A180$(50),A45A181$(50),A45A182$(50),A45A183$(50),A45A184$(50),A45A185$(50),A45A186$(50),A45A187$(50),A45A188$(50),A45A189$(50),A45A190$(50),A45A191$(50),A45A192$(50),A45A193$(50),A45A194$(50),A45A195$(50),A45A196$(50),A45A197$(50),A45A198$(50),A45A199$(50),A45A200$(50)
150 DIM A45A201$(50),A45A202$(50),A45A203$(50),A45A204$(50),A45A205$(50),A45A206$(50),A45A207$(50),A45A208$(50),A45A209$(50),A45A210$(50),A45A211$(50),A45A212$(50),A45A213$(50),A45A214$(50),A45A215$(50),A45A216$(50),A45A217$(50),A45A218$(50),A45A219$(50),A45A220$(50),A45A221$(50),A45A222$(50),A45A223$(50),A45A224$(50),A45A225$(50),A45A226$(50),A45A227$(50),A45A228$(50),A45A229$(50),A45A230$(50),A45A231$(50),A45A232$(50),A45A233$(50),A45A234$(50),A45A235$(50),A45A236$(50),A45A237$(50),A45A238$(50),A45A239$(50),A45A240$(50),A45A241$(50),A45A242$(50),A45A243$(50),A45A244$(50),A45A245$(50),A45A246$(50),A45A247$(50),A45A248$(50),A45A249$(50),A45A250$(50),A45A251$(50),A45A252$(50),A45A253$(50),A45A254$(50),A45A255$(50),A45A256$(50),A45A257$(50),A45A258$(50),A45A259$(50),A45A260$(50),A45A261$(50),A45A262$(50),A45A263$(50),A45A264$(50),A45A265$(50),A45A266$(50),A45A267$(50),A45A268$(50),A45A269$(50),A45A270$(50),A45A271$(50),A45A272$(50),A45A273$(50),A45A274$(50),A45A275$(50),A45A276$(50),A45A277$(50),A45A278$(50),A45A279$(50),A45A280$(50),A45A281$(50),A45A282$(50),A45A283$(50),A45A284$(50),A45A285$(50),A45A286$(50),A45A287$(50),A45A288$(50),A45A289$(50),A45A290$(50),A45A291$(50),A45A292$(50),A45A293$(50),A45A294$(50),A45A295$(50),A45A296$(50),A45A297$(50),A45A298$(50),A45A299$(50),A45A300$(50)
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Dragon Answers

If you've got a technical question write to Brian Cudge. Please do not send a SASE as Brian cannot guarantee to answer individual inquiries.

Arrays to declare

I AM relatively new to programming in Dragon Basic. I am trying to declare some large arrays for data storage, but keep running out of memory. I've tried typing PCLDR 1 which solved the problem for a while, but I would like to be able to access the memory used by graphics page one — however typing PCLDR 1 gives an error — Can you explain?

Doyle McCool



DRAGON Basic will not allow you to reference the first graphics page (with a PCLDR 1). However, you can do this BEFORE loading a program by typing the following:

POINT 25,0 POINT 25,0,0 NEW

or with DragonDOS, change this to:

POINT 25,0 POINT 25,0,0 NEW

This will give you just over 20K of free memory to use from Basic.

not have such a list, but I do know that the Dragon 32 serial numbers were not issued sequentially, therefore it is unlikely that such a list exists!

A merge emerges

I HAVE a number of computer subroutines which I wish to store on one tape, with the programs on one tape. However, when our file is read in it causes the routine already in memory.

How can I load the subroutines one by one into my small program?

J R Evans

52 Wood Green

Middlesex

Don 000 500

WHAT you need is a 'merge' command (which Dragon Basic does not have). This is one of those

questions which comes up fairly regularly — here's how to merge in programs together...

1) Load the first program from tape.

2) Type: 1 PEEK 25,0 PEEK 25,0

(Call these values A and B)

3) Type: 1 PEEK 25,0 PEEK 25,0

PEEK 25,0

(Call this value C)

4) POINT 25,0,0 NEW

POINT 25,0 PEEK 25,0

Where C is the value used in step 3.

5) Load in the second program

6) Type: POINT 25,0

A PEEK 25,0 B PEEK 25,0

Where A and B are the values used in step 2

7) Save the program with NAME

"NAME".A

Of course, the two programs

must not have line numbers that overlap the existing code unless

called in step 6 simply carries out the normal initialization after a

Basic program is loaded.

Comms board coming

I regularly get letters from readers who are interested in data communications using a modem (define boards etc.). So for those of you who are interested, here is an extract from a letter I received from Jim Fuller of 42 Robinson Road, Amersbury, Wiltshire SN1 1PL:

"I have designed, built, tested, and am now making available to others, an RS232C port that is both software and hardware compatible with the serial port on the Dragon 64. The main advantage of this port over others is that it can be used as a communications software written for the 64 (assuming the software does not need the extra RAM or 64 specific ROM coding).

"The RS232C upgrade is contained on a small printed circuit board that fits neatly inside the Dragon's case under the keyboard. The 2-pin DB9 socket is located on the left of the machine as on the 64, and is pin for pin compatible. The expansion port is still free for other (for example a GDS) upgrade.

"The upgrade is available to users of C64. For a further 10000 per installation service is available from Chris Foster (Tel: 0222 990000).

"Sure it's such a pity offering" says Brian, "but I answered all the letters I had". He is threatening to take another holiday if someone doesn't think of some more questions. He isn't taking a holiday on what we pay him, that's for sure...

Serial Dragons

CAN you tell me how Dragon Basic issued their serial numbers and what ranges were used for each issue of the main processor boards of the Dragon 32 and 64?

UNFORTUNATELY, I cannot give you a range of serial numbers for each board issue. Dragon Data did

Roll out the Show

Graham Smith returns from Cardiff Airport with a few pennies in his pocket.

THE latest Dragon show was held on Saturday 26th February and arranged by John Peen Discount Software at Niseac Airport, just outside Cardiff.

Apart from ourselves, Orange Software, the show was supported by Computape, Prestons, Harry Whitehouse and Dragonfire Services. There were demonstrations from the 68 Micro Group, an amateur radio group and a chap who I believe was David Mason of Music Maker, although I don't have time to enquire.

This time the show we had chosen to launch Orange Software on an unsuspecting public. I put my specially purchased orange shirt.

To our left, Rick Applegate and Ted Beccarello from the 68 Micro Group

managed to convince me to renew my membership in their group. Further along the side of the room, Andrew Hill, assisted by Tudor Davies, was selling software under the Dragonfire Services banner, most of it packaged in green!

The radio amateurs decided to move to the other end of the airport terminal to avoid interference problems. Just by the door, Harry and Wendy Massey of Computape were selling Commodore stock — now that Dave Hutchinson has called it a day. Computape have picked up his stock alongside Monolith's.

On the other side of the room, we had Bob Preston selling the R1 & A J Preston range of software and some others. Sandwiched between him and Harry White-

house was the music man himself, Dave Makin, demonstrating his tunes. Harry Whitehouse was selling his usual range of Dragon peripherals and his famous power supply.

Finally, backed up in the back of the room, were the organisers, Helen Peen of John Peen Discount Software.

There you have it. I thought I had better give you some idea what it was like, as not many of you turned up to see it. I think attendance was about 120, not the busiest show I have been to! However, on the bright side, we had people around all day, playing the demonstration games, and quite a few of them actually bought something too. We left the show in profit, if not rich and yes, we are going to Desert. See you there.